Including Indigenous Language in the Mathematics Classroom
Presented by Erin Eastwood & Isabelle Beauvais

Indigenous communities have developed unique mathematical ways of knowing based on their needs and their environment. Creating an environment that allows students to bring forth elements from their home language fosters a culturally responsive classroom. By familiarizing ourselves with the language and its structure, we, as teachers, are able to better understand how students might think about a concept.

The Six Domains for the Development of Mathematical Knowledge in All Cultures¹

<table>
<thead>
<tr>
<th><strong>Counting:</strong></th>
<th>The system use of methods to compare and order sets of objects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Localization:</strong></td>
<td>The exploration of one’s spatial environment and the symbolization of that environment with the help of models, diagrams, drawing, words, or other means.</td>
</tr>
<tr>
<td><strong>Measuring:</strong></td>
<td>The use of objects or measuring tools to quantify dimensions.</td>
</tr>
<tr>
<td><strong>Design:</strong></td>
<td>The creation of forms for an object or for decorating an object.</td>
</tr>
<tr>
<td><strong>Games:</strong></td>
<td>The development of games and the more or less formal rules that the players must follow.</td>
</tr>
<tr>
<td><strong>Explanation:</strong></td>
<td>Finding different ways of explaining a phenomenon, whether religious, animist, or scientific.</td>
</tr>
</tbody>
</table>

A Collaborative Approach: 
Including the Students and their Community

A welcoming environment and communication is key.

The students and the community are the teachers. Their input will help you develop a better grasp of their conceptual understandings of mathematical concepts.

Ways to Successfully Modify Instruction: 

- Be open to learning, introducing, and integrating terms in student’s first language.
- Explore authentic resources that will add to your personal knowledge.
- Pre-assess students to gage their ways of conceptualizing a concept.

Ways to Discover: 
The Diverse Ways of Conceptualizing Mathematical Concepts

- Think-Write-Share
- Activating Gist and Word Association
- Sharing Circle
- Inviting members of the community to participate in classroom activities

Resources
Powwow Counting In Cree
Author: Penny M. Thomas
Illustrator: Melinda Josie

The Caterpillar Woman
Author: Nadia Sammurtok
Illustrator: Carolyn Gan

My Arctic 1,2,3
Author: Michael Arvaarluk Kusugak
Illustrator: Vladyana Krykorka

Websites

The Robertson Program
Activities developed collaboratively with Rainy River School Board and the First Nations Communities which it serves, focused on math concepts that are embedded in local cultural practices.
https://wordpress.oise.utoronto.ca/robertson/family-math-nights/

Math Central
Mathematical games from the Aboriginal People of North America, foster problem solving, patterns and relations, probability, numbers and operations, geometry, critical thinking, and data management.
http://mathcentral.uregina.ca/RR/database/RR.09.00/treptau1/mathcontent.html

Aboriginal Mathematics K-12 Network
Improve mathematics education for Aboriginal learners. Access a variety of lessons and resources developed to integrate mathematics in culturally relevant ways.
http://blogs.ubc.ca/aboriginalmathnetwork/about/

Ontario First Nation, Métis, and Inuit Education Policy Framework
Framework intended to improve Aboriginal students outcomes by providing quality education from a holistic and integrated approach.